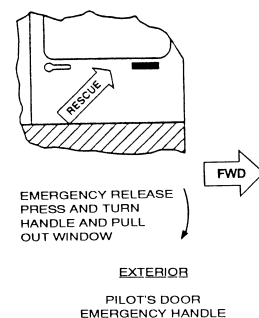
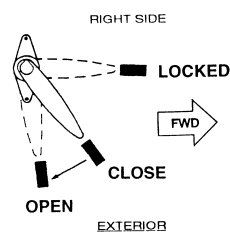
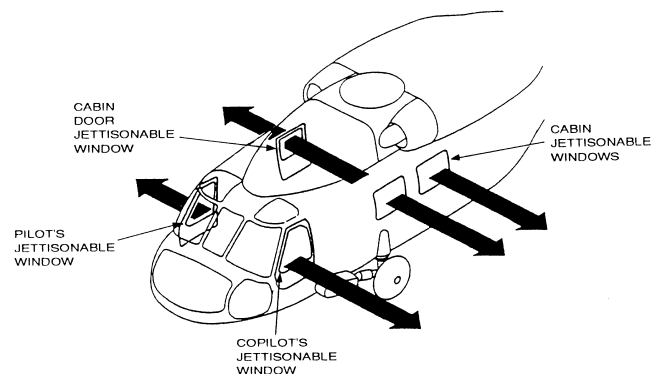




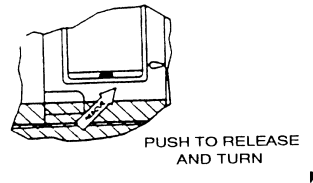
Section C. Helicopter Ditching

C.1. General

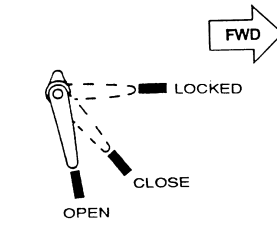
There is always the possibility a helicopter may have to **ditch** in the water. Coast Guard air crews receive extensive training in escape procedures for such emergencies. However, they may be disoriented due to personal injuries, aircraft attitude, damage, and/or environmental factors. For this reason, boat crew members must be familiar with emergency exits and entrances. You may have to open emergency exits to pull trapped air crew members to safety. The HH-60J has five emergency openings and the HH-65A has four. (See Figures 19-15 through 19-18).



HH-60J Emergency Entrances
Figure 19-15



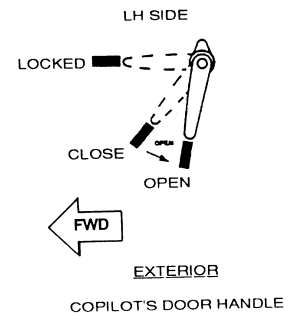
EXTERIOR
BELOW CARGO DOOR
EMERGENCY WINDOW



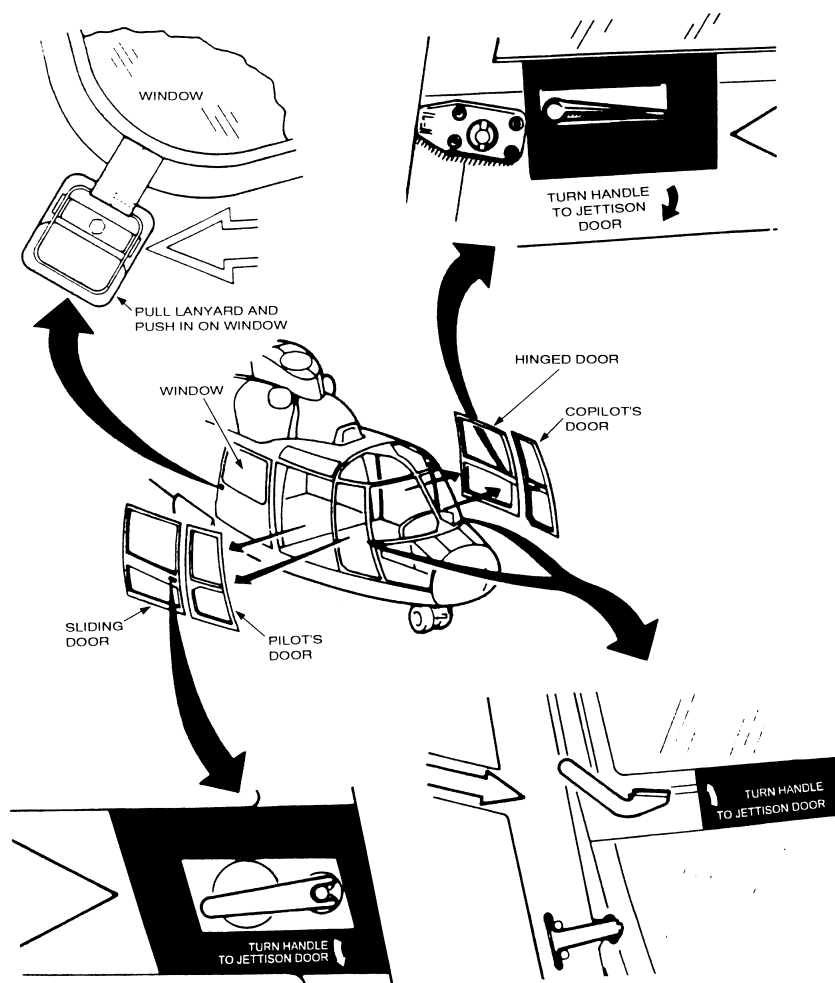
EXTERIOR
CARGO DOOR HANDLE



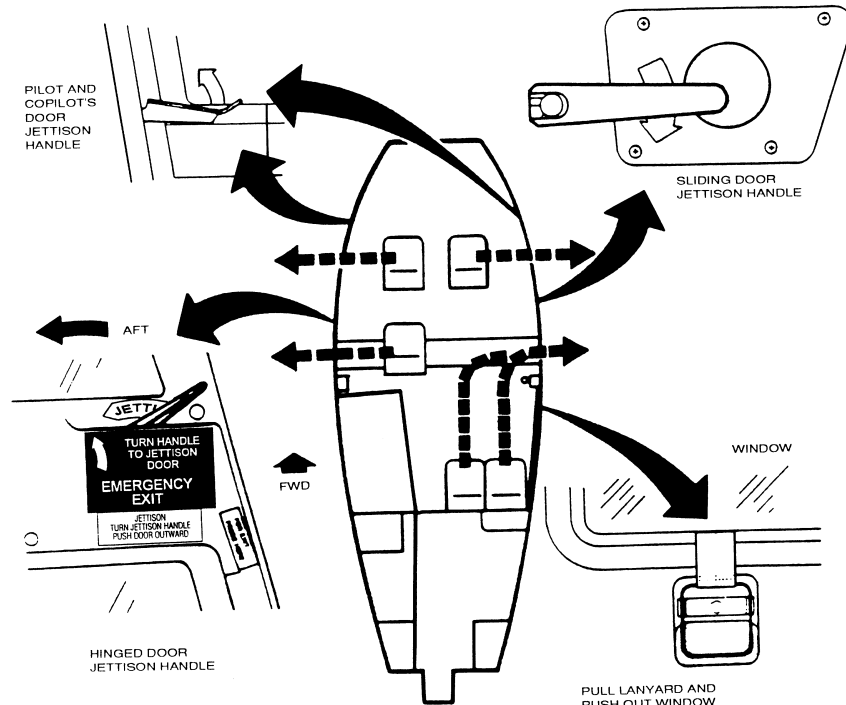
EXTERIOR
COPILOT'S DOOR
BELOW EMERGENCY HANDLE



HH-60J Emergency Entrances (cont.)
Figure 19-16



HH-65A Emergency Entrances
Figure 19-17



HH-65A Emergency Entrances (cont.)

Figure 19-18

C.2. Assisting a downed helicopter

CAUTION !

Boat crew members will not enter an inverted aircraft! Only a qualified diver may enter a helicopter after it has inverted (turned upside-down).

If a helicopter goes down near your boat during a hoist operation or you are called to assist a downed helicopter, do the following.

- Ensure the operational commander is advised of the ditching.
- Approach bow on from the leeward side of the helicopter.
- Make minimal wake so the vertical stability is not disrupted (when the helicopter is in an upright position).
- Be alert to the position of the rotor blades when recovering air crew.
- If a boat crew member must enter the aircraft, that crew member must wear a surface swimmer's harness tended from the boat.



Section D. Helicopter Salvage and Towing

D.1. General

After a helicopter ditches and the crew has been rescued, every effort should be made to salvage the airframe before it sinks. A Coast Guard helicopter can survive a ditching in limited wind and sea conditions, if its bottom integrity remains intact and flotation bags are deployed. If the helicopter becomes inverted (turned upside-down), it will have more severe damage and a greater risk of sinking.

D.2. Initial actions

NOTE

The primary concern during salvage is preventing the aircraft from inverting from an upright attitude.

When a helicopter ditches, the parent air station will assign a Salvage Officer and activate their Mishap Plan. Until the salvage officer arrives on scene, the senior aviator at the scene will act as the salvage officer. Boat handling, maneuvering, and the safety of the boat crew and survivors remain the coxswain's primary responsibility. If the aircraft is upright, the first boat on scene shall:

- If conditions permit, add flotation (e.g., flotation collars, inflatable life rafts, and boat fenders) to the helicopter to keep the helicopter from sinking. Once positive buoyancy is ensured, the salvage operation can proceed.
- Establish a security watch.

WARNING

Pyrotechnics become unstable when wet.

D.3. General towing procedures

Towing a helicopter is not an exact science! On-scene conditions may make it necessary to change from standard procedures. However, safety of people shall NEVER be compromised. When towing a Coast Guard helicopter, use the following procedures:

- Tow only when the aircraft cannot be hoisted onto a vessel in a timely manner.
- Remove the rotor blades (improves stability).
- Rig a light on the helicopter when towing between sunset and sunrise, or in restricted visibility.



CAUTION !

Do not attempt to tow a helicopter at night, upright or inverted -- unless there is no alternative.

- Tow only in calm seas.
- Remove all personnel from the aircraft.
- Use a drogue, if available, to minimize yawing.
- Tow at the slowest possible speed (do not exceed 5 knots).
- Place initial strain on the towing hawser at bare steerageway.
- Avoid towing the helicopter parallel to the wave trough to minimize risk of capsizing.
- Make all turns slow and wide to minimize risk of capsizing.
- Continuously monitor water depth to allow for the greater draft, when towing an inverted helicopter.
- Tow an inverted helicopter only after additional flotation is attached to it.
- Establish a tow watch

D.4. Tow watch

If ANY of the following conditions are seen, the tow SHALL be stopped:

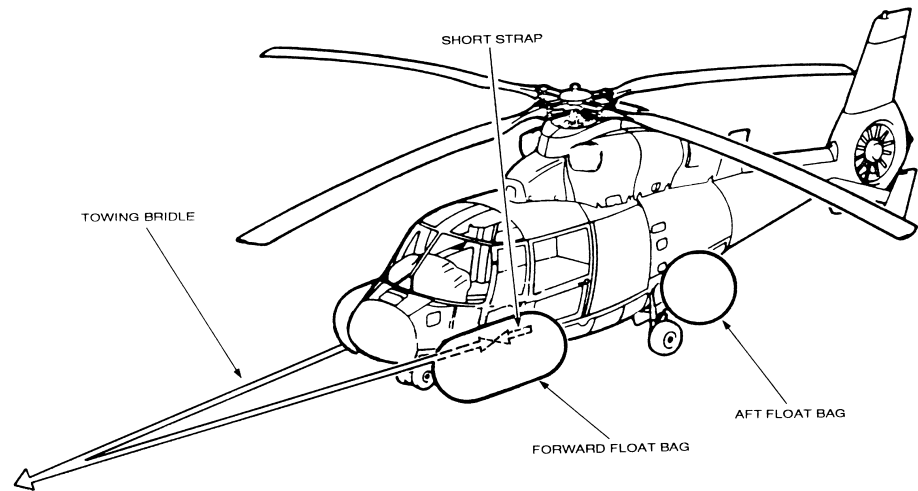
- Change in attitude that would indicate compartment flooding.
- Deflation or loss of any flotation bags or buoyant devices attached to the aircraft.
- Aircraft roll increases to a point where vertical stability may be lost.

D.5. Towing helicopter forward

Attach the towing bridle to both sides of the **14 degree frame**, the vertical frame only on the HH-65A, to which the pilot and co-pilot door is hinged (See Figure 19-19).

NOTE

Tow the helicopter forward whenever possible.



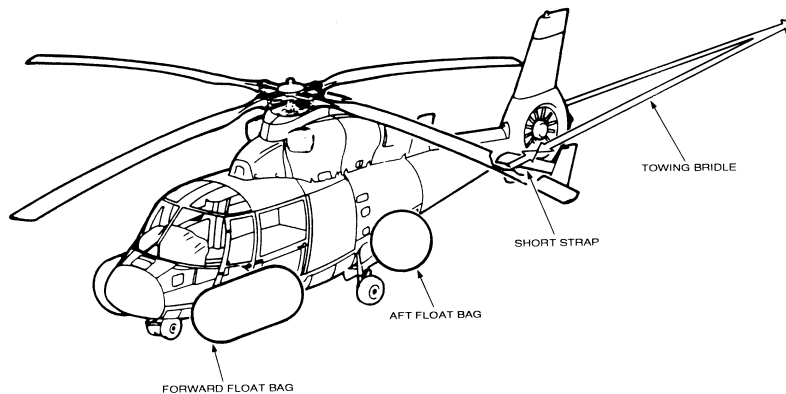
Configuration for Towing the HH-65A Helicopter Forward
Figure 19-19

D.6. Towing helicopter backward

Attach the towing bridle to the left and right side of the horizontal stabilizer (See Figure 19-20).

NOTE

If the tail cone has flooded, backwards towing will not be possible because the horizontal stabilizer will cause the tail to



Configuration for Towing the HH-65A Helicopter Backward
Figure 19-20

D.7. HH-60J Helicopter salvage and towing

The HH-60J is configured with two flotation bags. When deployed, the bags will provide the air crew with a minimum of two minutes to effectively exit the helicopter. The HH-60J may not remain afloat long enough to be salvaged.



D.8. Multi-unit (boat-helicopter) SAR operations

As a boat crew member, you will have many opportunities to work with helicopters on Coast Guard missions. Take every opportunity to familiarize yourself with the operations of the nearest local Coast Guard air station or other agency (e.g., Navy, Army, Air Force, National Guard, or state). Become acquainted with the different types of aircraft and their capabilities in your local operating area. General information about helicopters includes:

- Helicopters navigate in magnetic direction, similar to boats. They are equipped with superior navigation equipment. Their capabilities often exceed that of the average boat. In coastal operations, they can provide excellent navigation assistance.
- The helicopter's "Night Sun" search light is most effective as a search tool only on a clear, dry night. Moisture in the atmosphere refracts/scatters the light, making it less effective.
- When working with a helicopter at night, NEVER launch pyrotechnics/illumination signals (such as the MK-79/80 or M127A1) without first notifying the aircraft.
- When a helicopter hovers over surf or heavy seas, rotor downwash tends to blow the tops off breakers. This spray fills the air and greatly reduces visibility.



Section E. Fixed-wing Aircraft

Introduction

Boat operations with fixed-wing aircraft are not frequently done. However, this type of aircraft can provide extended search of an area and increased communication range while the boat does the detailed search and the actual inspection or assistance. Coast Guard aircraft will have their distinctive painting design and carry a VHF-FM radio for contacting maritime vessels. Also, Coast Guard Auxiliary fixed-wing aircraft may be available to help.

E.1. Auxiliary aircraft

Auxiliary aircraft are commonly known as “general aviation” aircraft. They are mostly single engine land planes, either high wing or low wing. There may be some twin engine aircraft, seaplanes, or helicopters. Auxiliary aircraft have no special painting design, but all are required to have their Federal Aviation Administration registration numbers on the fuselage or tail. The Coast Guard logo and lettering are not permitted; however, the facility decal is required. The aircraft may also carry the Auxiliary logo decal aft of the wings and/or the word RESCUE on the bottom of the wing or fuselage in 12-inch letters (visible from low altitudes). From the surface, an Auxiliary aircraft looks like any other civilian airplane.

E.2. Communications with aircraft

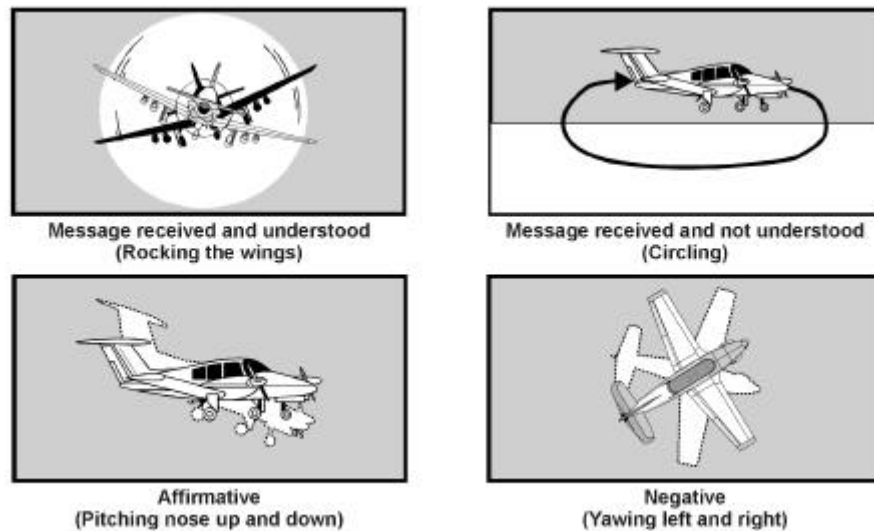
Communication between a boat and an aircraft can be done by voice radio or a variety of visual signals. Aircraft are equipped with VHF-AM aeronautical radios. In addition, those performing Coast Guard missions carry VHF-FM radios. The normal method for aircraft-boat contact is by means of the VHF-FM radio, calling on Channel 16 and then shifting over to a working frequency. Air-to-surface and surface-to-air visual signals may be used when a radio is not available.



E.2.a. Air-to-surface visual signals

Figure 19-21 shows air-to-surface signals that an aircraft may send to a boat. An aircraft may use the following signals to direct a boat to a place:

- (1) Circle the vessel at least once.
- (2) Cross the vessel's projected course close ahead at a low altitude while rocking the wings (opening and closing the throttle or changing the propeller pitch may be used instead of rocking the wings).
- (3) Head in the direction in which the vessel is to be directed.

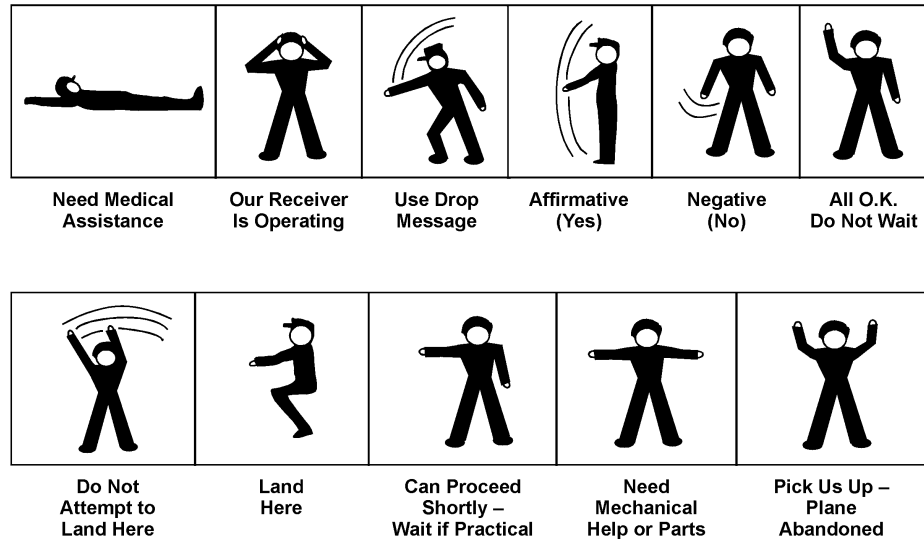


Air-to-Surface Visual Signals
Figure 19-21

An aircraft may show that assistance of the vessel is no longer required by crossing the vessel's wake close astern at low altitude while rocking the wings (opening and closing the throttle or changing the propeller pitch may be used instead of rocking the wings).

E.2.b. Surface-to-air visual signals

Figure 19-22 shows surface-to-air visual signals that a boat crew member may send to an aircraft. Also, when an aircraft can not specifically identify the boat it is in contact with, the boat may make a tight turn. This distinctive, circular wake should stand out among the other boats.



Surface -to-Air Visual Signals
Figure 19-22

E.3. Towing fixed-wing aircraft

Some fixed-wing aircraft are equipped with floats for short periods of travel on the surface of the water. Aircraft are fragile and can be easily damaged by a boat coming into contact. Always check with the aircraft crew to determine if a tow is desired and for advice on towing procedures. General guidance includes:

E.3.a. Approaching the aircraft

- Ensure the propeller(s) is stopped.
- Extinguish all open flames and smoking material (aircraft fuel is highly flammable).
- Approach from upwind (the aircraft will likely have a faster drift rate than the boat).
- Steer the boat into the wind and back down to the aircraft but do not come in contact.
- Use minimum power to maneuver and fend off by hand (Do not use a boat hook.).
- Allow swells from passing boats to subside before getting close.



E.3.b. Picking up
the tow

-
- Pass the towline to an aircraft crew member. If such a person is not available, carefully approach and attach the line to the appropriate fitting on the float(s).
 - Single-float aircraft: secure the towline to the towing ring and pass it through the fairlead on the bow of the float, then to the towing boat.
 - Twin-float aircraft: A bridle may be necessary. Connect a tow only to the special fittings provided. Damage could result if any other towing point is used.
-

E.3.c. Towing the
aircraft

-
- Tow at low speed.
 - Avoid towing in adverse conditions, if possible.
 - Use a short towline.
 - IF directional stability is of concern, consider use of “wing lines” tied to the wing struts or wing tips. Wing lines go from the boat’s port quarter to the left wing, and the boat’s starboard quarter to the right wing. Do not place any towing strain on the wing lines.
 - The tow watch must watch closely so that the aircraft does not overtake the boat.
-



Appendix 19-A Sample Briefing to Pass to Vessel Prior to Helicopter Hoisting

"A helicopter is proceeding to your position and should arrive at approximately _____. Maintain a radio watch on _____ MHz/kHz/Channel _____ VHF-FM. The helicopter will attempt to contact you. Provide a clear area for hoisting, preferably on the port stern. Lower all masts and booms that can be lowered. Secure all loose gear. Keep all unnecessary people clear of the hoisting area. Just before the helicopter arrives, secure the vessel's radar or put it in standby mode. Do not direct lights towards the helicopter as it will adversely affect the pilot's vision. Direct available lighting to illuminate the hoisting area. When the helicopter arrives, change course to place the wind 30 degrees on the port bow and maintain a steady course and steerageway. As the helicopter approaches, strong winds may be produced by the rotors, making it difficult to steer. The helicopter will provide all the equipment for the hoisting. A line will probably be trailed from the helicopter for your crew to guide the rescue device as it is lowered. Before touching the rescue device, allow it to touch your vessel. This will discharge static electricity. If you have to move the rescue device from the hoisting area to load the patient, unhook the cable from the rescue device and lay the loose hook on the deck so it can be retrieved by the helicopter. Do not attach the loose hook or the cable to your vessel. The helicopter may move to the side while the patient is being loaded. Have the patient wear a personal flotation device, and attach any important records, along with a record of medications that have been administered. When the patient is securely loaded, signal the helicopter to move into position and lower the hook. After allowing the hook to ground on the vessel, re-attach it to the rescue device. Signal the hoist operator with a "thumbs up" when you are ready for the hoisting to begin. As the rescue device is being retrieved, tend the trail line to prevent the device from swinging. When you reach the end of the trail line, gently toss it over the side."

NOTE: The briefing can be used for your own hoisting operations or you may be requested to pass this guidance on to the distressed vessel as the helicopter is en route to it. Also, some vessels or aircraft may use the term "winch" to mean the same thing as "hoist".



Chapter 19: Air Operations